

pubescence, in well-preserved specimens with pale stripes and spots. *Scutellum* identical in colour and pubescence. *Abdomen* blackish, with a broad greyish stripe at each side, or sides greyish, the grey median stripe and spots at sides usually distinct. *Legs* blackish, the fore tibiæ pale at base only, the middle and posterior tarsi with the first joint almost wholly whitish. *Wings* with four well-marked rosettes, the apical band double, beginning as a broad spot from the apex of second longitudinal vein, proceeding with its lower branch as a narrow wavy line to the middle of the second submarginal cell; its upper branch crosses the apex of wing in a straight line, but is usually broken up into two or three large spots, which are often very faint and sometimes obliterated; below the lower branch small half-moon white spots begin, one in the second submarginal cell and two in the other cells as far as the apical cell, almost touching the pale markings at border in all the cells; veins brown, stigma a darker brown.

Male is identical, but smaller, the *abdomen* more reddish brown, the spots not distinct. *Eyes* copper-coloured, the large facets take up two-thirds of the eye. *Forehead* covered with grey tomentum; a black spot between the antennæ, the first joint of which is stout, but shorter than the third, blackish, with grey tomentum, the third reddish. *Palpi* yellow, with black hairs.

LXV. — A Synopsis of the Siluroid Fishes of the Genus *Liocassis*, with Descriptions of new Species. By C. TATE REGAN, M.A.

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OF twenty-four species of *Liocassis** all but five, *L. naso*, *fuscus*, *mahakamensis*, *vaillanti*, and *liacanthus*, are represented in the British Museum collection. Of the last-named I have seen one of the types, kindly sent to me for examination

* *Pimelodus rama*, Ham. Buch., from Bengal and Assam, is placed by Day in *Liocassis* (Fish India, p. 451, pl. cxv. fig. 2); it seems improbable that this little fish really belongs to the genus; but, if it does, the large eye and minute mandibular barbels distinguish it from all the other species. *Liocassis torosilabris*, Sauvage (Ann. Sci. Nat. (6) i. 1874, no. 5, p. 7), from China, is described as having movable labial teeth, and is doubtless a *Bagrichthys*, whilst Mlle. Popta has shown that *Liocassis macropterus*, Vaillant, is a *Bagroides* (Notes Leyden Mus. xxvii. p. 228).

by Prof. Max Weber. The species may be distinguished by means of the following synopsis:—

Species from Siam, Malay Peninsula and Archipelago.

I. Head covered with smooth skin.

A. Dorsal spine less than $\frac{1}{3}$ length of head; maxillary barbel reaching pectoral.

Depth of body 5 in the length 1. *fuscus*, Popta, 1904.
Depth of body 6 in the length 2. *mahakamensis*, Vaill.,
[1902.]

B. Dorsal spine at least $\frac{2}{3}$ length of head.

1. Maxillary barbel reaching pectoral; head nearly as broad as long 3. *stenomus*, Cuv. & Val.
2. Maxillary barbel not extending beyond head, which is longer than broad.

a. Occipital process reaching basal shield of dorsal spine.

Head $1\frac{1}{3}$ to $1\frac{1}{2}$ as long as broad 4. *pæcilopterus*, Cuv. & Val.
Head $1\frac{1}{3}$ as long as broad 5. *siamensis*, sp. n.

b. Occipital process not reaching basal shield of dorsal spine.

a. Vomerine band of teeth without or with a very short and blunt median posterior process.

* Caudal peduncle about twice as long as deep.

Occipital process not longer than eye, less than its distance from basal bone of dorsal spine 6. *micropogon*, Cuv. & Val.

Occipital process a little longer than eye, as long as its distance from basal bone of dorsal spine [1894.]
7. *saravacensis*, Bouleng.,

Occipital process $1\frac{1}{3}$ to 2 as long as eye, 2 to $2\frac{1}{2}$ as long as its distance from basal bone of dorsal spine; head $1\frac{1}{3}$ as long as broad [1906.]
8. *baramensis*, Regan,

Occipital process more than twice as long as eye, 4 times as long as its distance from basal bone of dorsal spine; head $1\frac{2}{3}$ as long as broad 9. *merabensis*, sp. n.

β. Caudal peduncle $2\frac{1}{2}$ to $2\frac{3}{4}$ as long as deep.
10. *hosi*, Regan, 1906.

b. Vomerine band of teeth with a strong median posterior projection 11. *doriae*, sp. n.

II. Upper surface of postorbital part of head naked, rugose; occipital process meeting basal shield of dorsal spine; snout scarcely projecting beyond mouth; teeth on palate forming a curved band without median posterior projection.

A. Supraclavicular plate small, not produced backwards, its lower edge in contact with basal part of clavicular process.

1. Head nearly as broad as long; pectoral spine as long as head.
12. *breviceps*, sp. n.

2. Head longer than broad; pectoral spine shorter than head.

a. Depth of body $5\frac{1}{2}$ to 7 in the length; caudal peduncle $2\frac{1}{2}$ as long as deep.

Bony area of upper surface of head with straight anterior edge; occipital process longer than broad; pelvics reaching anal; fins immaculate [1894.
13. *inornatus*, Bouleng.,

Bony area of upper surface of head with emarginate anterior edge; occipital process broader than long; pelvics not nearly reaching anal; dorsal and anal with dark bars. 14. *vallanti*, sp. n.*

b. Depth of body $4\frac{1}{2}$ in the length; caudal peduncle $1\frac{3}{4}$ as long as deep 15. *rugosus*, sp. n.

B. Supraclavicular plate produced backwards into a pointed process.

Supraclavicular process small, not extending so far back as clavicular process [Beaufort, 1912.
16. *liacanthus*, Weber &

Supraclavicular process strong, extending as far back as clavicular process [1890.
17. *moeschii*, Bouleng.,

Species from China and Japan.

I. Snout strongly projecting beyond mouth; caudal deeply forked; occipital process rugose; dorsal spine long, serrated. [1864.
18. *longirostris*, Günth.,

II. Snout obliquely truncated, projecting beyond mouth; caudal forked, the middle rays about $\frac{1}{2}$ as long as the longest; occipital process covered by skin.

A. Band of teeth on palate continuous.

Dorsal spine serrated, about $\frac{2}{3}$ length of head; pectoral spine $\frac{2}{3}$ length of head. [1864.
19. *crassilabris*, Günth.,

Dorsal spine smooth or slightly serrated, $\frac{1}{2}$ to $\frac{2}{3}$ length of head; pectoral spine $\frac{2}{3}$ length of head 20. *crassirostris*, sp. n.

B. Band of teeth on palate divided in middle.

21. *naso*, Garm., 1912.

III. Mouth subterminal.

A. Caudal fin moderately emarginate, the middle rays about $\frac{2}{3}$ as long as the longest 22. *emarginatus*, sp. n.

B. Caudal fin truncate or slightly emarginate.

Occipital process slender, subcutaneous; length of head 4 to $4\frac{1}{3}$ in length of fish; caudal peduncle $1\frac{2}{3}$ to $1\frac{3}{4}$ as long as deep 23. *truncatus*, sp. n.

Occipital process broad, rugose; length of head 5 in length of fish; caudal peduncle $2\frac{1}{4}$ as long as deep 24. *tæniatus*, Günth., 1873.

* *L. moeschii* (non Bouleng.), Vaillant, Notes Leyden Mus. xxiv. no. 1, 1902, p. 61, figs. 8 & 9.

Liocassis siamensis, sp. n.

Depth of body $4\frac{2}{3}$ in the length, length of head $3\frac{3}{4}$. Breadth of head $1\frac{1}{2}$ in its length, length of snout $3\frac{1}{2}$, diameter of eye $5\frac{1}{4}$, interorbital width $3\frac{2}{3}$. Head covered with skin; occipital process nearly three times as long as broad, extending to basal bone of dorsal spine; snout blunt; nasal barbel extending to posterior edge of eye; maxillary barbel $1\frac{1}{2}$ as long as outer mandibulary, $2\frac{1}{2}$ as long as inner, extending to operculum; mouth subterminal; teeth on palate in a curved band as broad as that of the premaxillaries, without median process. Dorsal I 7; spine strong, feebly serrated behind, $\frac{3}{4}$ as long as head; adipose fin as long as its distance from dorsal spine. Anal 15. Pectoral spine $\frac{4}{5}$ length of head; inner edge serrated. Pelvics reaching anal. Caudal forked. Caudal peduncle $1\frac{3}{4}$ as long as deep. Yellowish, with brownish cross-bands, which are much broader than the interspaces, one on head, a second from dorsal to pectoral and pelvic fins, a third from adipose fin to anal, a fourth on the caudal peduncle and base of the caudal fin; rest of caudal pale except for a brownish bar on each lobe.

A single specimen, 90 mm. in length, from the Bangpakong River, Siam, received in 1897 from the Royal Siamese Museum.

Liocassis merabensis, sp. n.

Depth of body $4\frac{2}{3}$ to 5 in the length, length of head $3\frac{2}{3}$ to $3\frac{3}{4}$. Breadth of head $1\frac{2}{3}$ in its length, diameter of eye 8 or 9, interorbital width $5\frac{1}{2}$. Head covered with smooth skin. Snout moderately broad, rounded, projecting a little beyond the mouth; nasal barbel nearer eye than end of snout, when laid back nearly reaching eye; maxillary barbel extending to middle or posterior edge of eye; occipital process three times as long as broad, separated by a space equal to $\frac{1}{4}$ its own length from basal shield of dorsal spine; clavicular process not extending beyond middle of pectoral spine. Vomerine teeth in a curved uninterrupted band, nearly as broad as that of the premaxillaries, without or with a very short and blunt median posterior process. Dorsal I 7; spine very feebly serrated behind, about $\frac{1}{2}$ the length of head; adipose fin $1\frac{2}{3}$ or $1\frac{3}{4}$ as long as dorsal, longer than its distance from latter. Anal 14. Pectoral spine from a little more than $\frac{1}{2}$ to $\frac{3}{5}$ the length of head; inner edge strongly serrated. Pelvics not quite reaching anal. Caudal forked. Caudal peduncle twice as long as deep. Brownish; head with small dark spots; above the lateral line two elongate

oval pale yellow areas, the anterior extending to below the adipose fin, the posterior commencing near end of that fin; larger pale areas below lateral line are confluent below; fins with blackish basal and intramarginal bands.

Two specimens, 145 and 150 mm. in total length, from Merabel, North Borneo, collected by Mr. A. Everett.

Liocassis doriae, sp. n.

Depth of body $4\frac{1}{2}$ in the length, length of head $3\frac{1}{2}$. Breadth of head $1\frac{2}{3}$ in its length, diameter of eye 8, interorbital width 5. Head covered with smooth skin. Snout moderately broad, obtusely pointed, $\frac{1}{3}$ the length of head, projecting beyond the mouth; nasal barbel a little nearer to eye than to tip of snout, when laid back not quite reaching the eye; maxillary barbel extending to below the eye; occipital process three times as long as broad, separated by an interspace a little less than its own length from the basal shield of the dorsal spine; clavicular process extending to the middle of the pectoral spine. Vomerine teeth in a curved uninterrupted band, with a pointed median posterior projection, extending back nearly as far as the lateral horns. Dorsal I 7; spine very feebly serrated behind, nearly $\frac{1}{2}$ the length of head. Adipose fin $1\frac{2}{3}$ as long as the base of the dorsal and equal to its distance from the latter. Anal 14. Pectoral spine a little more than $\frac{1}{2}$ the length of head; inner edge strongly serrated. Pelvics not quite reaching the origin of anal. Caudal forked. Caudal peduncle $2\frac{1}{4}$ as long as deep. Brownish, with two oblong pale areas, which may be confluent, on each side of the posterior part of the body above the lateral line; similar pale areas below the lateral line, confluent and meeting in the mid-ventral line; fins with blackish basal and intramarginal bands.

A single specimen, 190 mm. in total length, from Borneo, presented in 1868 by the Marquis G. Doria.

Liocassis breviceps, sp. n.

Depth of body $4\frac{2}{3}$ – $5\frac{1}{2}$ in the length, length of head $4\frac{2}{3}$ – $4\frac{4}{5}$. Head nearly as broad as long. Diameter of eye $4\frac{1}{2}$ –5 in the length of head. Snout broad, obtuse, $\frac{1}{3}$ the length of head, scarcely projecting beyond the mouth; nasal barbel a little nearer to eye than to tip of snout, when laid back extending to the operculum; the maxillary barbel extending to the middle of pectoral; upper surface of head, behind the orbits, naked, rugose, this bony area with straight transverse anterior edge; occipital process as long as broad, meeting the

basal shield of the dorsal spine; supraclavicular plate small, not produced backwards. Teeth on the palate in a curved uninterrupted band, without posterior median process. Dorsal I 6; spine weakly serrated behind, $\frac{2}{3}$ or $\frac{3}{4}$ the length of head. Adipose fin longer than the base of dorsal, but shorter than its distance from the latter. Anal 14-15. Pectoral spine as long as the head, with strongly serrated inner edge. Pelvics not extending to the anal. Caudal deeply forked. Caudal peduncle twice as long as deep. Greyish; dorsal with dark basal and intramarginal bands.

Two specimens, 75 and 90 mm. in total length, from Deli, Sumatra, collected by Herr Moesch.

Liocassis rugosus, sp. n.

Depth of body $4\frac{1}{2}$ in the length, length of head 4. Head $1\frac{1}{3}$ as long as broad. Diameter of eye 8 in the length of head, interorbital width $3\frac{3}{5}$. Snout broad, rounded, $\frac{1}{3}$ the length of head, scarcely projecting beyond the mouth; nasal barbel equidistant from eye and tip of snout, when laid back extending a little beyond the eye; maxillary barbel nearly reaching the base of pectoral; upper surface of head, behind the orbits, naked, rugose, this bony area with the anterior edge deeply emarginate; occipital process as long as broad, meeting the basal shield of the dorsal spine; supraclavicular plate small, not produced backwards. Teeth on the palate in a curved uninterrupted band, without posterior median process. Dorsal I 7; spine feebly serrated behind, $\frac{2}{3}$ the length of head. Adipose fin $1\frac{3}{4}$ as long as the base of dorsal and longer than its distance from the latter. Anal 15. Pectoral spine $\frac{4}{5}$ the length of head, with strongly serrated inner edge. Pelvics extending to the anal. Caudal forked. Caudal peduncle $1\frac{3}{4}$ as long as deep. Yellowish, with very broad brown cross-bands, the first ending posteriorly at the origin of the pelvics, the second above the anal fin, the third on the caudal peduncle; fins greyish.

A single specimen, 120 mm. in total length, from Poeh, Sarawak, collected by Mr. A. Everett.

Liocassis crassirostris, sp. n.

Depth of body $5\frac{1}{2}$ in the length, length of head 4 to $4\frac{1}{4}$. Breadth of head $1\frac{1}{3}$ in its length, length of snout $2\frac{3}{4}$ to 3, diameter of eye $5\frac{1}{2}$ to $6\frac{1}{2}$, interorbital width $3\frac{3}{5}$. Head covered with skin; occipital process narrow, as long as snout, extending beneath skin to basal bone of dorsal spine.

Snout obtuse, projecting beyond the mouth; nasal barbel, when laid back, reaching middle of eye; outer mandibular barbel much longer than inner, but shorter than maxillary barbel, which nearly reaches the operculum. Teeth on palate in a curved band. Dorsal I 7; spine not serrated, $\frac{1}{2}$ to $\frac{3}{5}$ length of head; adipose fin longer than its distance from the dorsal. Anal 18. Pectoral spine $\frac{3}{5}$ length of head; inner edge serrated. Pelvics reaching anal. Caudal forked, the middle rays about $\frac{1}{2}$ as long as the longest. Caudal peduncle $2\frac{1}{5}$ to $2\frac{1}{3}$ as long as deep. Brownish, with irregular and discontinuous paler longitudinal stripes; fins dusky towards the margin.

Kia-tiang-fu, Sze Chuen, China.

Two specimens, 70 and 140 mm. in total length, collected by Mr. Pratt.

Liocassis emarginatus, sp. n.

Depth of body 6 to $6\frac{1}{2}$ in the length, length of head 4 to $4\frac{1}{3}$. Breadth of head $1\frac{1}{3}$ in its length, diameter of eye $5\frac{1}{2}$ to 6, interorbital width 4 to 5, length of snout 3. Head covered with skin; occipital process a little longer than eye, separated by an interspace not more than $\frac{1}{2}$ its own length from basal bone of dorsal spine. Snout obtuse, projecting somewhat beyond mouth; teeth on palate in a curved band, narrowest in the middle; nasal barbel, when laid back, reaching posterior part of eye; inner mandibular barbel shorter than outer, which is shorter than maxillary barbel, which reaches operculum. Dorsal I 7; spine not serrated, $\frac{1}{2}$ length of head or a little less; adipose fin equal to or a little longer than its distance from the dorsal. Anal 16-18. Pectoral spine about $\frac{1}{2}$ length of head; inner edge strongly serrated; clavicular process extending well beyond its middle. Pelvics extending to vent. Caudal emarginate, the middle rays about $\frac{2}{3}$ as long as the longest. Caudal peduncle 2 to $2\frac{1}{2}$ as long as deep. Coloration apparently yellowish, with dark blotches.

Four specimens, 80 to 115 mm. in total length, from Kia-tiang-fu, Sze Chuen, collected by Mr. Pratt.

Liocassis truncatus, sp. n.

Depth of body $5\frac{1}{2}$ to 6 in the length, length of head 4 to $4\frac{1}{3}$. Breadth of head $1\frac{1}{5}$ to $1\frac{1}{3}$ in its length, length of snout 3 to $3\frac{1}{3}$, diameter of eye 5 to 6, interorbital width $3\frac{1}{2}$ to 4. Head covered with skin; occipital process slender, a little shorter than snout, usually extending to basal bone of dorsal spine.

Snout blunt, scarcely projecting beyond mouth; nasal barbel, when laid back, extending to posterior edge of eye; outer mandibular barbel much longer than inner, but shorter than maxillary barbel, which just reaches operculum. Teeth on palate in a curved band, which is narrowest in the middle. Dorsal I 7; spine not or but feebly serrated, $\frac{1}{2}$ length of head; adipose fin longer than its distance from dorsal. Anal 18-20. Pectoral spine serrated, $\frac{3}{5}$ length of head; clavicular process extending beyond its middle. Pelvics nearly or quite reaching anal. Caudal slightly emarginate or truncate. Caudal peduncle $1\frac{3}{5}$ to $1\frac{3}{4}$ as long as deep. Brownish, with traces of longitudinally expanded pale areas; fins with dusky margins.

Five specimens, 75 to 130 mm. in total length, from Kia-tiang-fu.

In the largest specimen there is an interspace between the occipital process and the basal bone of the dorsal spine, but it evidently belongs to the same species as the others. *L. tenuatus*, Günth., differs in the smaller head, broader and rugose occipital process, and the more slender caudal peduncle.

LXVI. — *On a small Collection of Rhynchota made by Mr. David R. Tait at Henderson's Island.* By W. L. DISTANT.

HENDERSON'S (or, perhaps, as it is better known, Elizabeth) Island is only about five miles in length, and in the remote Pacific region: lat. $24^{\circ} 21'$ S. and long. $128^{\circ} 18'$ W. The fine species of *Catacanthus* here described is probably not endemic, but a migrant from some of the larger and little-known islands in this area.

The types are in the British Museum.

HETEROPTERA.

Fam. Pentatomidæ.

Subfam. SCUTELLERINÆ.

Coleotichus sp.?

A single specimen, which I have been unable to identify.